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Claims

[c0001] 1. An exercise device comprising:

a frame intended to rest on a floor or other supporting surface, said frame having a crank axis which is essentially perpendicular to the longitudinal axis of said exercise device;

a pair of cranks, each crank rotatably connected to said frame at said crank axis;

a pair of output links each having a pair of distal ends and a medial portion, said output links operably connected to a respective crank, wherein each output link is rotatably connected to its respective crank at its medial portion thereby defining a first connection point, each said output link operatively connected to said frame near one of said distal ends thereby defining a first pivot point, that limits movement in a first reciprocating path relative to said frame;

a pair of intermediate links each having a pair of distal ends and a medial portion, wherein each intermediate link is operatively connected to said frame near one of said distal ends thereby defining a second pivot point that limits movement in a second reciprocating path relative to said frame, and where each said intermediate

link is rotatably connected at its medial portion to the second distal end of a respective output link thereby defining a third pivot point; and,

a pair of elongated pedal arms, each pedal arm having a surface area for an individual to stand upon with one foot and an axle, each pedal arm operatively connected to a respective intermediate link near the end distal from said second pivot point thereby defining a pedal arm pivot point, said axle operatively engaging said frame thereby limiting movement in a third reciprocating path relative to said frame; and, wherein each of said pedal arm pivot points travel in a substantially tear-drop cyclic path in response to displacement of said pedals arms along said third reciprocating path.

[c0002] 2. The exercise device of claim 1, wherein a respective first rocker link is pivotally interconnected between said frame and a respective said first pivot point.

[c0003] 3. The exercise device of claim 1 further comprising at least one output pulley and at least one resistance device operatively connected to one another by a belt, direct drive or chain, said output pulley connected to said pair of cranks.

[c0004] 4. The exercise device of claim 2, wherein a respective second rocker link is pivotally interconnected between

said frame and a respective said second pivot point.

[c0005] 5. The exercise device of claim 1, wherein a respective first rocker link is pivotally interconnected between said frame and said second pivot point.

[c0006] 6. The exercise device of claim 2, wherein the pivotal connection of said first rocker link to the frame is selectively movable.

[c0007] 7. The exercise device of claim 4, wherein the pivotal connection of said second rocker link to the frame is selectively movable.

[c0008] 8. The exercise device of claim 5, wherein said pivotal connection is selectively movable relative to said frame.

[c0009] 9. The exercise device of claim 1 wherein said frame includes a guide.

[c0010] 10. The exercise device of claim 9 wherein said guide has a pivotal first end connected to said frame defining a fourth pivot point and a second distal end, where said guide can be pivoted at the first end to adjust the inclination of said guide relative to the frame.

[c0011] 11. The exercise device of claim 10 wherein an actuator is connected to said frame and further operably connected near the second distal end of said guide.

[c0012] 12. The exercise device of claim 1 wherein a wheel is rotatably connected to said axle for travel along said third reciprocating path.

[c0013] 13. The exercise device of claim 11 wherein each said respective axle has a wheel rotatably connected thereto and each wheel engages said guide for travel along said third reciprocating path.

[c0014] 14. The exercise device of claim 1, wherein each said axle is located between each respective said surface area and pedal arm pivot point.

[c0015] 15. The exercise device of claim 1, wherein each said surface area is located between said respective axle and pedal arm pivot point.

[c0016] 16. The exercise device of claim 1 further comprising a pair of support links, each said support link is pivotally connected to said frame, defining a frame pivot point, and pivotally connected to a respective pedal arm at said axle.

[c0017] 17. The exercise device of claim 16, wherein said frame pivot point is selectively adjustable relative to the frame.

[c0018] 18. The exercise device of claim 16, wherein said support links each include a handle extending generally up-

ward from said pivotal connection.

[c0019] 19. The exercise device of claim 1, wherein said pedal arms are pivotable about the pedal arm pivot point for transportation or storage.

[c0020] 20. The exercise device of claim 9, wherein said guide is pivotable into a generally upward folded position for transportation or storage.

[c0021] 21. The exercise device of claim 1 wherein said substantially tear-drop cyclic path is narrowed and relatively sharp in shape at one end and large and relatively rounded at the other.

[c0022] 22. The exercise device of claim 1 further comprising a pair of elongated members each having a handle located at a distal end, each of said members pivotally connected to said frame at one point and operatively connected to a respective said output link.

[c0023] 23. An exercise device comprising:

a frame intended to rest on a floor or other supporting surface, said frame having a crank axis which is essentially perpendicular to the longitudinal axis of said exercise device;

a pair of cranks, each crank rotatably connected to said frame at said crank axis;

a pair of output links each having a pair of distal ends and a medial portion, said output links operably connected to a respective crank, wherein each output link is rotatably connected to its respective crank at its medial portion thereby defining a first connection point, each said output link operatively connected to said frame near one of said distal ends thereby defining a first pivot point, that limits movement in a first reciprocating path relative to said frame;

a pair of elongated members each having a handle located at a distal end, each of said members pivotally connected to said frame at one point and operatively connected to a respective said output link;

a pair of intermediate links each having a pair of distal ends and a medial portion, wherein each intermediate link is operatively connected to said frame near one of said distal ends thereby defining a second pivot point that limits movement in a second reciprocating path relative to said frame, and where each said intermediate link is rotatably connected at its medial portion to the second distal end of a respective output link thereby defining a third pivot point; and,

a pair of elongated pedal arms, each pedal arm having a surface area for an individual to stand upon with one foot, a traveling means for limiting movement of a portion of a respective pedal arm along one direction to a

reciprocating movement;

each pedal arm operatively connected to a respective intermediate link near the end distal from said second pivot point thereby defining a pedal arm pivot point, said axle operatively engaging said frame thereby limiting movement in a third reciprocating path relative to said frame; and, wherein each of said pedal arm pivot points travel in a substantially tear-drop cyclic path in response to displacement of said pedals arms along said third reciprocating path.

[c0024] 24. The exercise device of claim 22 wherein said traveling means is either a rocker link, or at least one rotatable wheel connected to the pedal arm by an axle, or a sliding sleeve, where the sleeve or wheel is designed to travel along a guide.

[c0025] 25. The exercise device of claim 1 wherein said substantially tear-drop cyclic path is narrowed and relatively sharp in shape at one end and large and relatively rounded at the other.

[c0026] 26. The exercise device of claim 23 wherein said substantially tear-drop cyclic path is narrowed and relatively sharp in shape at one end and large and relatively rounded at the other.

[c0027] 27. An exercise device comprising:

a frame intended to rest on a floor or other supporting surface, said frame having a crank axis which is essentially perpendicular to the longitudinal axis of said exercise device;

a pair of elongated pedal arms;

at least one output pulley rotatably connected to said frame;

at least one resistance device operatively connected to said output pulley;

said output pulley operatively connected to a pair of linkage means, each said linkage means operatively connecting a respective pedal arm to said frame, said linkage means including a pivotal connection to said pedal arm defining a pedal arm pivot point, wherein each of said pedal arm pivot points travel in a substantially teardrop cyclic path in response to displacement of a portion of said pedals arms along said longitudinal axis.

[c0028] 28. The exercise device of claim 27 further comprising a pair of elongated handles each operatively connected to a respective linkage means.